Does Mislabeling COVID-19 Elicit the Perception of Threat and Reduce Blame?

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Supplemental Information

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Appendix A Characteristics of sample

			COVID-19 Group				"Chinese Virus" Group				
	Overall		3-item		4-item		3-item		4-item		
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Pr(>F)
Male	559.00	46.58	152.00	51.18	144.00	47.21	125.00	42.81	138.00	45.10	0.21
Female	641.00	53.42	145.00	48.82	161.00	52.79	167.00	57.19	168.00	54.90	0.21
Age: 18-29	343.00	28.58	88.00	29.63	85.00	27.87	84.00	28.77	86.00	28.10	0.96
Age: 30-49	607.00	50.58	148.00	49.83	156.00	51.15	153.00	52.40	150.00	49.02	0.85
Age: 50 and older	250.00	20.83	61.00	20.54	64.00	20.98	55.00	18.84	70.00	22.88	0.68
White	923.00	76.92	222.00	74.75	227.00	74.43	224.00	76.71	250.00	81.70	0.12
Black	95.00	7.92	22.00	7.41	25.00	8.20	27.00	9.25	21.00	6.86	0.73
Hispanic	70.00	5.83	20.00	6.73	20.00	6.56	17.00	5.82	13.00	4.25	0.55
Asian	92.00	7.67	26.00	8.75	27.00	8.85	19.00	6.51	20.00	6.54	0.53
Other	20.00	1.67	7.00	2.36	6.00	1.97	5.00	1.71	2.00	0.65	0.40
COVID-19: worried	973.00	81.08	243.00	81.82	245.00	80.33	238.00	81.51	247.00	80.72	0.96
COVID-19: not worried	227.00	18.92	54.00	18.18	60.00	19.67	54.00	18.49	59.00	19.28	0.96
$\geq$ half time Twitter/Facebook	609.00	50.75	165.00	55.56	139.00	45.57	152.00	52.05	153.00	50.00	0.10
$<$ half time Twitter/Facebook	591.00	49.25	132.00	44.44	166.00	54.43	140.00	47.95	153.00	50.00	0.10
Democrat	692.00	57.67	167.00	56.23	164.00	53.77	173.00	59.25	188.00	61.44	0.24
Republican	373.00	31.08	96.00	32.32	105.00	34.43	80.00	27.40	92.00	30.07	0.28
Independent	135.00	11.25	34.00	11.45	36.00	11.80	39.00	13.36	26.00	8.50	0.29
liberal	587.00	48.92	138.00	46.46	138.00	45.25	149.00	51.03	162.00	52.94	0.18
Conservative	287.00	23.92	69.00	23.23	83.00	27.21	64.00	21.92	71.00	23.20	0.45
Moderate	303.00	25.25	84.00	28.28	76.00	24.92	73.00	25.00	70.00	22.88	0.50
Income: Less than $25,000	196.00	16.33	52.00	17.51	45.00	14.75	55.00	18.84	44.00	14.38	0.38
Income: $25,000 to $74,999	602.00	50.17	147.00	49.49	164.00	53.77	137.00	46.92	154.00	50.33	0.41
Income: $75,000 or more	402.00	33.50	98.00	33.00	96.00	31.48	100.00	34.25	108.00	35.29	0.78

Appendix B Design Effect Tests for List Experiment

The following tables (B.1, B.2, and B.3) are statistical tests for design effect in overall sample and each subgroup. If the Bonferroni-corrected p-value is below 0.1, we reject the null hypothesis of no design effect. If it is above 0.1, we fail to reject the null (Blair & Imai, 2012).

Table B.1: **Overall**

	Est.	S.E.
pi(Y_i(0) = 0, Z_i = 1)	0.01	0.01
pi(Y_i(0) = 1, Z_i = 1)	0.05	0.03
pi(Y_i(0) = 2, Z_i = 1)	0.07	0.02
pi(Y_i(0) = 3, Z_i = 1)	0.04	0.01
pi(Y_i(0) = 0, Z_i = 0)	0.04	0.01
pi(Y_i(0) = 1, Z_i = 0)	0.41	0.02
pi(Y_i(0) = 2, Z_i = 0)	0.35	0.02
pi(Y_i(0) = 3, Z_i = 0)	0.03	0.01
Bonferroni-corrected p-value	1.00	

Table B.2: **Partisanship**

	Democrat		Independent		Republican	
	Est.	S.E.	Est.	S.E.	Est.	S.E.
pi(Y_i(0) = 0, Z_i = 1)	0.03	0.01	0.04	0.06	-0.05	0.02
pi(Y_i(0) = 1, Z_i = 1)	0.08	0.04	-0.03	0.09	0.04	0.05
pi(Y_i(0) = 2, Z_i = 1)	0.05	0.02	0.01	0.05	0.11	0.04
pi(Y_i(0) = 3, Z_i = 1)	0.03	0.01	0.03	0.02	0.06	0.02
pi(Y_i(0) = 0, Z_i = 0)	0.01	0.00	0.10	0.04	0.09	0.02
pi(Y_i(0) = 1, Z_i = 0)	0.45	0.03	0.35	0.08	0.36	0.04
pi(Y_i(0) = 2, Z_i = 0)	0.32	0.03	0.47	0.07	0.36	0.05
pi(Y_i(0) = 3, Z_i = 0)	0.03	0.01	0.04	0.04	0.04	0.03
Bonferroni-corrected p-value	1.00		0.71		0.06	

Table B.3: **Ideology**

	Conservative		Moderate		Liberal	
	Est.	S.E.	Est.	S.E.	Est.	S.E.
pi(Y_i(0) = 0, Z_i = 1)	-0.02	0.03	0.03	0.03	0.03	0.01
pi(Y_i(0) = 1, Z_i = 1)	0.07	0.06	0.11	0.06	0.02	0.04
pi(Y_i(0) = 2, Z_i = 1)	0.17	0.04	0.03	0.04	0.04	0.02
pi(Y_i(0) = 3, Z_i = 1)	0.08	0.02	0.01	0.01	0.02	0.01
pi(Y_i(0) = 0, Z_i = 0)	0.09	0.02	0.04	0.02	0.01	0.01
pi(Y_i(0) = 1, Z_i = 0)	0.31	0.04	0.34	0.05	0.50	0.03
pi(Y_i(0) = 2, Z_i = 0)	0.32	0.06	0.36	0.05	0.35	0.03
pi(Y_i(0) = 3, Z_i = 0)	-0.02	0.03	0.08	0.02	0.03	0.02
Bonferroni-corrected p-value	0.47		1.00		1.00	

Appendix C Heterogeneous Treatment Effect on Social Media Use

People in the U.S. may have cognitively connected China and COVID-19, and have established negative attitude against China and Chinese immigrants prior to our experiment, which may confound the overall effect of the "Chinese Virus" label. Therefore, we conducted a subgroup analysis by breaking down subjects by their frequency of using Facebook/Twitter to get news and information. As COVID-19 was first explicitly labeled as "Chinese Virus" by Trump's tweet and then spread broadly on social media, we suspect that people who use social media more frequently will be less responsive to the "Chinese Virus" label in our experiment, as they may have already read and discussed about this label and established their attitude toward Chinese immigrants. As presented in Figure C.1, we found no significant treatment effect in the high social media usage group. In the low social media usage group, 0.13 ($SE = 0.08$, $p = 0.13$) of people perceived Chinese immigrants as threats to U.S. public health in the COVID-19 group, while the proportion reached 0.24 ($SE = 0.08$, $p = 0.04$) in the "Chinese Virus" treatment group. Although it is a 0.12 magnitude increase, the difference is not statistical significant ($SE = 0.12$, $p = 0.31$).

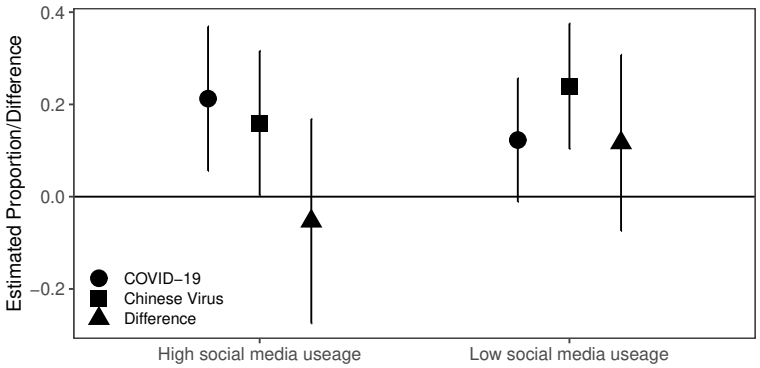

Figure C.1: **The Heterogeneity of the "Chinese Virus" Label Treatment Effect on Social Media Use**

Note: "Difference" is the treatment effect of the "Chinese Virus" message, with the NLS estimation. Bars are 90% confident intervals. "High social media usage" group includes participants reporting using or getting information/news from Twitter/Facebook more than about half of the time on an average day.

Appendix D Estimation for Social Desirability Bias in the List Experiment

We follow (Coffman et al., 2017) to estimate the social desirability bias. First, we observed direct question answer as d_i (0,1), and 3-item count answer as c_i (between 0 to 3). Second, we calculated the sum of both questions as $y_i^D = d_i + c_i$. Third, we coded the 4-item count answer with one sensitive statement as y_i^S (between 0 to 4). Ideally, if there is no social desirability effect, $y_i^D = y_i^S$. So, the change in sensitive "Agree" can be defined as $\mu = y_i^S - y_i^D$. Then, we entered our estimators into a linear regression:

$$y_i = \beta_0 + \mu S_i, \begin{cases} y_i = y_i^D & \text{when } S_i = 0 \\ y_i = y_i^S & \text{when } S_i = 1 \end{cases} \tag{1}$$

in which S_i (0,1) is the dummy variable for the 3- or 4-item list and μ is our coefficient of the social desirability effect.

Table D.1: **Overt Perception of Threat of Chinese Immigrants**

	Overall	Liberal	Conservative	Moderate
"Chinese Virus"	0.106	0.099	0.182	0.363
	(0.239)	(0.428)	(0.411)	(0.445)
Constant	-1.889^{***}	-2.446^{***}	-1.281^{***}	-1.893^{***}
	(0.172)	(0.314)	(0.292)	(0.323)
N	589	287	133	157
Log Likelihood	-235.761	-82.495	-72.117	-66.807
AIC	475.521	168.990	148.234	137.613

Note: All models are estimated with logit. Standard errors are in brackets.
*p < .1; **p < .05; ***p < .01

Appendix E Excluding Manipulation Check Failure sample

The following figures (E.1, E.2, and E.3) are conducted from full sample estimations excluding manipulation check failure subjects (N = 1,114). They output similar results as our main analyses.

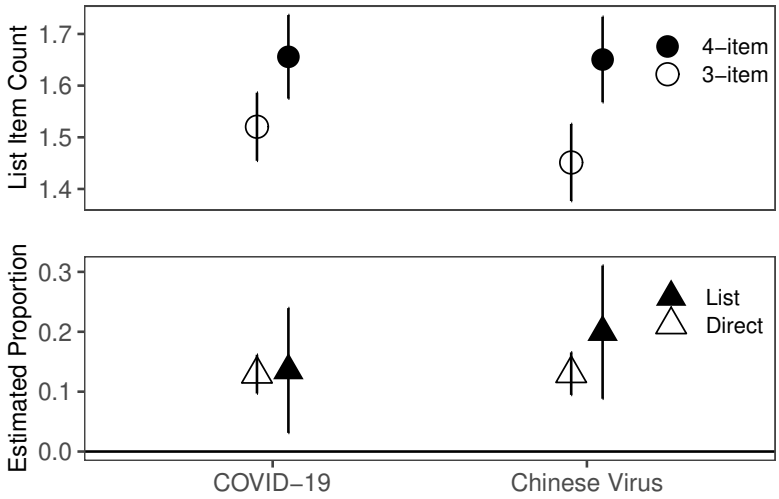

Figure E.1: **List Item Count and Proportion of Perceived Threat**

Note: The upper panel is the mean comparisons between 3-item and 4-item subgroups. The lower panel is the comparison between direct perceived threat proportion (direct) and the list item count difference-in-means estimation of perceived threat proportion (list). Bars are 90% confident intervals.

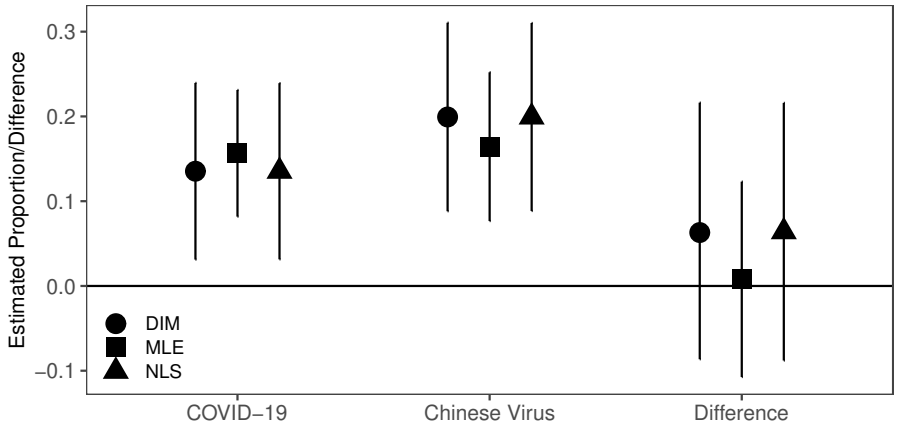

Figure E.2: **The "Chinese Virus" Label Treatment Effect**

Note: "Difference" is the treatment effect of the "Chinese Virus" message. Bars are 90% confident intervals.

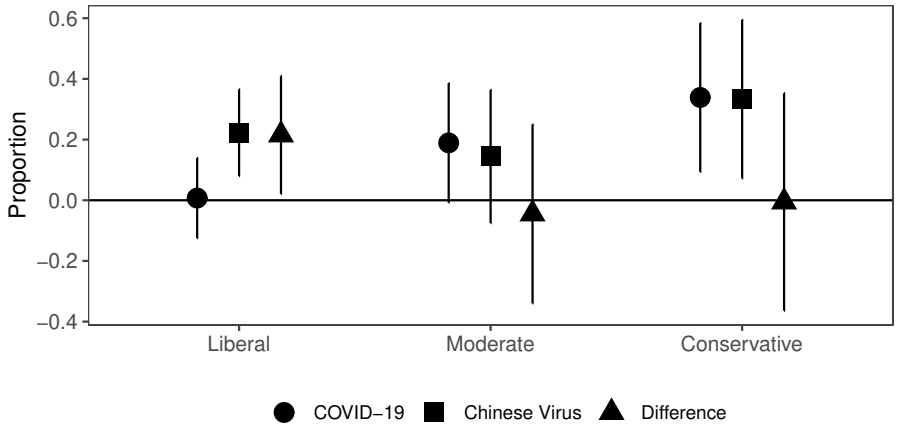

Figure E.3: **The Heterogeneity of the "Chinese Virus" Label Treatment Effect**

Note: "Difference" is the treatment effect of the "Chinese Virus" message. Bars are 90% confident intervals.

References

Blair, G., & Imai, K. (2012). Statistical analysis of list experiments. *Political Analysis*, *20*(1), 47–77. doi: 10.1093/pan/mpr048

Coffman, K. B., Coffman, L. C., & Ericson, K. M. M. (2017). The size of the LGBT population and the magnitude of antigay sentiment are substantially underestimated. *Management Science*, *63*(10), 3168–3186. doi: 10.1287/mnsc.2016.2503